

Appl. No. 10/790,434  
Amendment Dated July 31, 2009  
Reply to Office Action of April 1, 2009

## REMARKS

Claims 1-20 are pending in this application. Claims 16 and 18 have been withdrawn from consideration. Claims 1-15, 17, and 19-20 are rejected.

By this paper, claims 1, 10, 17, 19 and 20 are amended and claim 9 is cancelled.

The applicants believe that in view of these amendments and the following discussion, all of the claims in this application are allowable. If, however, the Examiner believes that there are any unresolved issues requiring adverse action in any of the claims no pending in the application, it is requested that the Examiner telephone Jeffery J. Brosemer, Ph.D., ESQ. at 732-335-5773 so that arrangements may be made for resolving such issues as expeditiously as possible.

### **Claim Rejections – 35 U.S.C § 112**

Claims 1, 17, 19 and 20 are rejected under the provisions of 35 U.S.C § 112. More particularly, the Examiner stated that the terminology “operate in a deep saturation” is vague and indefinite. In response, the applicants have amended claims 1, 17, 19 and 20 such that the definition of operating in deep saturation is recited therein. The applicants now request the Examiner to withdraw these rejections.

### **Claim Rejections – 35 U.S.C § 103(a)**

Claims 1-15, 17, 19 and 20 are rejected under the provisions of 35 U.S.C § 103(a) as being unpatentable over Yiannopoulos (IEEE Photonics Technology Letters, Vol. 15, No. 6, June 2003) in view of Cho et al (IEEE Photonics Technology Letters, Vol. 15, No. 1, January 2003).

In response, the applicants have amended independent claims 1, 10, 17, 19, 20 such that they more clearly and precisely define the invention of the instant application. In particular, each of the independent claims now recites the specific characteristics of the deep saturation mode in which the semiconductor optical amplifier(s) operate. Additionally, each of these independent claims recites what the applicants believe is a particular distinguishing aspect of the present invention, namely that  $\Delta P_{OUT}(dB) / \Delta P_{IN}(dB)$  is less than about 0.25, where  $P_{OUT}$  is the power of the optical signal output from the amplifiers, and  $P_{IN}$  is the power of the optical signal input into the amplifiers.

In formulating the rejections, the Examiner noted in the office action that Cho – as far as the Examiner understood – discloses that the input power to the SOA can be controlled and therefore the ratio of the  $\Delta P_{OUT}(dB) / \Delta P_{IN}(dB)$  of the optical amplifier can be controlled to have the result of less than about 0.25.

In making this comparison, the applicants submit that the Examiner is mistaken in his interpretation of the Cho reference.

In particular, the Examiner is certainly correct that Cho does seem to teach some sort of control of the SOA. However, the applicants submit that any such teaching is – at most – limited to control of the output power to the input power ratio. It does not – either explicitly or implicitly – either alone or in any combination – teach or suggest the ration between the output power change and the input power change ( $\Delta P_{OUT}(dB)/ \Delta P_{IN}(dB)$ ) is less than about 0.25, where  $P_{OUT}$  is the power of the optical signal output from the amplifiers, and  $P_{IN}$  is the power of the optical signal input into the amplifier.

As such, the applicants submit that these independent claims are not rendered obvious by the cited combination of references.

Inasmuch as each of the remaining dependent claims depends therefrom one of these independent claims and further distinguishes them, the applicants submit that they too are not rendered obvious by the cited combination of references.

Accordingly, the applicants respectfully request the Examiner to withdraw these rejections.

**Conclusion:**

The applicants submit that all of the claims now present in the application fully comply with the provisions of 35 U.S.C. § 112, and 103 and are therefore allowable. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

Respectfully submitted,  
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**CERTIFICATE OF TRANSMISSION UNDER 37 C.F.R. 1.8(a)**

I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office on July 31, 2009.

s/Jeffery J. Brosemer/

Signature

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